**MCCS Quantitative Reasoning Math Pathway Learning Outcomes 3 credits**

*Course Description*

Quantitative Reasoning provides a foundation in critical thinking, problem solving, and mathematical and statistical skills aligned with citizenship, workforce and real-world applications. The goals of the course are to engage students in meaningful mathematical experiences that will increase their quantitative and logical reasoning abilities and strengthen the mathematical abilities that they will encounter in other disciplines. A focus of the course is to develop and support communication and collaboration skills. This course is designed as a gateway course for students entering non-STEM degree programs.

*Learning Outcomes*

The Quantitative Reasoning Course is built upon four major components: numeracy and proportional reasoning, probability and statistics, modeling, and finance. The learning outcomes are categorized to reflect these concepts. After successfully completing this course, the student will be able to:

*Numeracy and Proportional Reasoning*

* Apply proportional reasoning skills to real-life contexts including unit analysis, percentages, ratios, decimals, estimation and scaling.
* Justify and communicate clearly mathematical decisions made when applying proportional reasoning to solve problems.
* Explain how numbers can be misinterpreted.
* Distinguish between and use absolute and relative change.
* Evaluate accuracy and precision and the reasonableness of mathematical values and measurements.
* Use scientific notation when working with large and small numbers.

*Statistics*

* Identify important considerations involved in sampling for statistical studies.
* Evaluate statistical claims and analyze the visual display of statistical information including the use of various charts and graphs.
* Summarize, interpret and represent data sets using basic descriptive statistics.
* Compute and draw conclusions from theoretical and empirical probabilities.

*Modeling*

* Create and analyze multiple representations of mathematical models including tables, graphs, equations, graphs and words and describe their limitations.
* Use appropriate units and vocabulary to describe and interpret rates of change (slope) of linear models.
* Demonstrate the concept of linear versus exponential models

in real world contexts.

* Use technology (i.e. calculators, spreadsheets, internet) appropriately as a tool for investigating mathematical models.

*Finance*

* Apply mathematics to various aspects of managing a budget, including various types of loans, investments, and taxes.
* Explain the concept of inflation and how it applies to individuals.